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ABSTRACT

In the midst of changes in the demographics, the economy, educational programs, and admission policies, the gap between majority and minority racial groups in their representation in the college population has been decreasing but still persists. This paper describes the trends in California high school graduates college-going patterns during the 1990s. Data were gathered from the California Postsecondary Education Commission, which collects school and district level data on college freshmen. Different racial patterns emerge for enrollments in different types of institutions (University of California system, California State Universities, California Community Colleges). Asians increased their participation in the most selective institutions, while the increase in black and Hispanic enrollments was mainly in the least selective ones. Various school demographic variables were not successful in predicting growth in college enrollments. The participation of two districts in the national "Closing the Gap" program did not seem to increase this growth. Four appendixes contain tables and figures of supporting data. (Contains 20 tables, 39 figures, and 19 references.) (SLD)

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Closing the Gap in college-going: A study of trends of California public high school graduates' college-going patterns

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ABSTRACT

In the midst of changes in the demographics, the economy, educational programs and admission policies the gap between majority and minority racial groups in their representation in the college population has been decreasing but still persists. This paper describes the trends in California high school graduates' college-going patterns during the 1990s. Different racial patterns emerge for enrollments in different types of institutions (University of California system, California State Universities, California Community Colleges). Asians increased their participation in the most selective institutions, while the increase in black and Hispanic enrollments was mainly in the least selective ones. Various school demographic variables were not successful in predicting "growth" in college enrollments. Neither did participation of two districts in the "Closing the Gap" program seem to increase this "growth".

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Closing the Gap in college-going:
A study of trends of California public high school graduates' college-going patterns

Introduction

Higher education qualifications determine employment opportunities, professional success and social status. Level of education serves as a means for social mobility; it is observed for example that college graduation is associated with higher earnings and more stable employment (National Center for Educational Statistics (NCES), 1997a). College graduates are more likely to enter more prestigious professions, especially graduates from elite institutions. Any inequality in the representation of groups in college population in terms of ethnic or racial descent is therefore going to be translated into social inequality between these groups.

One of the main features of the US population is its diverse ethnic composition and its multicultural character. Growing diversity is a major characteristic of the dramatic changes which have occurred in the US college population during the last thirty years; college enrollments of students from non-majority racial and ethnic groups, from economically disadvantaged families, women, and older individuals have been substantially increased (Turner et al., 1996). Since the seventies, when questions of "access, equity, and educational justice were high on the educational policy agenda" (Birnbaum, 1996, p.446) minority undergraduate enrollment increased considerably more than total enrollment (Pelavin and Kane, 1990a); minority degree attainment followed a similar trend. However, these groups are still underrepresented in higher education relative to their general population share (NCES, 1997a) and the aim of equal representation of racial and ethnic groups in the student population is far from being achieved. In addition, there are differences between the rates of increase for various minority groups, as well as in the types of institutions they choose to attend (Mow and Nettles, 1996).

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Theoretical and Empirical Background

Access to Higher Education in the US: The recent history

The issue of equality between the various racial and ethnic groups has been dominant in the recent history of the US. In an effort against racial discriminations, which favored the majority group of whites/Caucasians, the civil rights movement was initiated in the 1950s and remained strong in the 1960s and early 1970s. As in other sectors of social life, it brought about changes in education as well. For higher education in particular, changes such as open admissions, recruitment of minorities, development of ethnic studies programs came as a response to the unjust treatment of minorities from the educational system (Astin, 1982).

As a result, the gap between majority and minority representation in higher education began to narrow down. Meanwhile – and until the present – the population composition has not remained in a static state. Apart from the traditional racial groups of whites, blacks and Native Americans, other minority groups, such as Asians and Hispanics began to increase. The numbers of students enrolling to colleges, irrespective of racial origin also began to grow. However, despite the progress that has been made in decreasing the differences between the proportions of students from each ethnic group seeking postsecondary education, representation of racial and ethnic groups in the student population is disproportionate to their population size. Entry to college remains a major "leakage" point at which disproportionately large numbers of students from minority groups drop out of the educational "pipeline" (Astin, 1982).

The US student population

In general, the student population in the US has been increasing in the last few decades. Table 1 presents the number of students enrolled in undergraduate degree programs in US colleges from 1970 to 2000 in five-year intervals. The number of students enrolled in an undergraduate degree program has nearly doubled in the last 30 years with the most notable increase in the early 1970s. The "postwar baby boom" is an explanation given for the expansion in higher education that happened about 20 years later (Solomon and Wingard, 1991). Enrollments in 2-year colleges have leveled off in the 1990s, while

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those in 4-year colleges continue to increase until today. Recently, more than two thirds of the student body have been attending 4-year colleges.

TABLE 1

College Enrollment of Students in the US (in thousands)

	1970	1975	1980	1985	1990	1995	2000
All undergraduates	6274	8108	8488	9114	9683	10315	10903
2-year college students	1692	2561	2666	2772	3190	3121	3140

Source: US Census Bureau, School Enrollment, Historical Tables, Table A-7, College Enrollment of Students 14 to 34 Years Old, by Type of College, Attendance Status, Age, and Sex: October 1970 to 2000 http://www.census.gov/population/socdemo/school/tabA-7.pdf

Data from the US Census Bureau were used to construct Table 2, which shows the percentage of students attending college (not just freshmen) over the high school graduates population in the age group 14 to 24 by racial group.

TABLE 2

Percentage of US High School Graduates enrolled in Colleges by racial group

	1970	1975	1980	1985	1990	1995	2000
Asians/PI	-	-	-	-	-	-	61.6[a]
Blacks	26.0	32.0	27.6	26.1	33.0	35.4	39.4
Hispanics	25.8[b]	35.5	29.8	26.9	29.0	35.3	36.5
White	33.2	32.4	31.8	34.4	39.4	43.1	43.2
Total	32.7	32.5	31.6	33.7	39.1	42.4	43.3

Source: US Census Bureau, School Enrollment, Historical Tables, Table A-5, Population 14 to 24 Years Old by High School Graduate Status, College Enrollment, Attainment, Sex, Race, and Hispanic Origin: October 1967 to 2000. http://www.census.gov/population/socdemo/school/tabA-5.txt

[a] Earlier data not available for Asians/PI.

[b] 1972 figure, earlier data not available

A much higher percentage of the Asian (including Pacific Islanders) population who graduated from high school attended college than from any other racial group in the last few years. Asians have not traditionally been underrepresented in the US school system, thus they are not treated as minority (Solmon and Wingard, 1991). Whites, after a slender decline during the 1970s, had a rapid increase in the 1980s and an increase with a smaller rate in the 1990s. On the contrary, blacks and Hispanics peaked in the mid-1970s and then declined for about 10 years, to rise again after 1985. Maguire (1988)

comments on findings that blacks and Hispanics enrollment rates peaked in the mid-1970s and then declined with modest gains in the1980s, while whites had a fairly stable enrollment rate during that period. He described this situation as a "backsliding... on the road toward equity" (p.22) and that retrogression had replaced the momentum forwarded by affirmative action. However, census data after 1985 indicate that minorities' participation to college began to rise again. It remains true though that they are still underrepresented compared to the majority whites and Asians groups. In the year 2000, with an overall 43.3% of the 14-to-24-year-old-population who have graduated from high school attending college, much more than half of the Asian high school graduate population attended college; whites followed with a considerably lower 43.2% and an approximate 4% and 7% difference over blacks and Hispanics respectively.

College going follows high school graduation, and high school students' aspirations to finish high school and attend college change over time. Findings from the National Longitudinal Study in 1972 and NELS 1988 showed that the proportion of high school students expecting to finish only high school or less dropped dramatically between 1972 and 1992 in all racial and ethnic groups (NCES, 1997a). Actual high school graduation numbers show an increase for blacks from 60 to 70% in the 1970s only, with a corresponding 81.4 to 82.5% for the whites (Wilson and Melendez, cited in Maguire, 1988).

The proportion of those aspiring to attend college immediately after high school increased with fairly constant between-group differences. When the type of institution is taken into account though, different racial patterns emerge. Students seeking a bachelor's degree sometimes prefer to start their studies in a 2-year college because of the lower tuition and expenses. However, they are far less likely to attain a bachelor's degree within 5 years than those starting at a 4-year institution. As for those who do eventually get their degree, it takes them much longer to do so, since in many cases they choose to attend part time (NCES, 1997b). Comparing the early 1970s to the early 1990s, about 20% more white, black and Asian students planned to continue studies at a 4-year college; the increase for Hispanics was about half of that (NCES, 1997a). In contrast, the proportion of Hispanics reporting plans to attend a 2-year college increased by 15%, of blacks by 6%, of whites remained constant and of Asians decreased by 6%. In the early

1980s, minorities had an enrollment rate in two-year institutions that was approximately equal to their population proportion of 21.3%. However, they are seriously underrepresented in four-year colleges, and even more so in private ones (Maguire, 1988). The majority of the Hispanics for example was enrolled in 2-year colleges.

California: Recent admission policies

This study focuses in college-going patterns in California. Koretz et al. (2001) provide a brief overview of the trends in postsecondary admissions in California: in the broader environment supporting affirmative action, race among other factors in college admissions, was legitimized by a Supreme Court decision in 1978 to ensure racial diversity in higher education. Quota systems or separate admission processes for minorities were not recommended though. Then, the state of California moved to practices that would promote minority representation.

But in 1995, amidst a dynamic socioeconomic environment characterized by changing demographics, growing minority populations and rapid economic development, the University of California Board of Regents enacted SP-1, a resolution maintaining that race, ethnicity, sex, religion, color and national origin should not be considered as criteria in postsecondary admissions. Constitutional support for SP-1 came one year later with the approval of Proposition 209 from the citizens of California.

With the recent actions representing "a full repeal of affirmative action policies in California's state system of higher education" (Koretz et al., 2001, p.3), and minority participation in higher education being placed at risk, universities began an effort to inform potential applicants about the changes in admission processes and their dedication for maintaining diversity and to recruit students from high schools, which were underrepresented in postsecondary institutions.

Recent changes endorsed at the University of California for admission present an interesting case. Prospective students become UC eligible by completing required high school courses and by submitting grades and standardized test scores fulfilling the requirements of a numerical eligibility index. Individual UC campuses select their students from the pool of UC eligible students using 14 criteria, 10 of which are described as academic and the remaining refer to qualifications such as special talents,

intellectual or leadership skills, and accomplishments in the face of personal challenges. The campuses have been following a "two-tiered" process in which 50-75 percent of the freshman class is admitted only on academic factors. Supplemental non-academic factors are considered together with academic ones for admitting the remaining freshmen (University of California Office of the President, 2001b). Beginning in Fall 2001, the University of California introduced an additional program the "Eligibility in the Local Context", under which "the top 4 percent of students in each California high school who are on track to graduate and have completed specified academic coursework by the end of the junior year will be designated UC eligible" (University of California Office of the President, 2001a). The top percent is determined in terms of GPA and eligible students must complete certain subject requirements.

The UC Board of Regents replaced on November 2001 the "two-tiered" system with a new admissions policy called "comprehensive review", which will take effect in Fall 2002. While the process for obtaining UC eligibility remains the same, when UC campuses decide whether to admit or reject a UC eligible applicant, all 14 academic and non-academic criteria have to be considered. The Board of Regents explained that "students records will be analyzed not only for their grades and test scores – important baseline indicators of academic potential – but for additional evidence of such qualities as motivation, leadership, intellectual curiosity, and initiative." (University of California Office of the President, 2001c).

High school course taking patterns, performance, and college attendance

The examination of transcripts from the High School and Beyond data indicated that within all racial groups there has been an increase in the average number of course units taken in high school. Between 1982 and 1994 the proportion of students taking more stringent "New Basics" curriculum with more rigorous classes also increased substantially for all groups; overall the percentage went from 14% to 50.6%. NCES (1997a) concludes that these results show that in the mid 1990s students were much better prepared for college than in the early 1980s.

However, differences in performance exist between groups. Whites scored much higher than all the other groups in reading skills on the 1994 NAEP. In the 1992 NAEP

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in mathematics and the 1990 NAEP in science, there was a large gap between Asians and whites versus their Hispanic, black and American Indian/Natives counterparts. The gap in the mathematics assessment, though, has been narrowing. Improvement in scores in minority SAT takers has been observed as well, especially for blacks and American Indian/Natives planning to attend college (NCES, 1997a).

Reviewing the factors associated with minority students' college attendance, Pelavin and Kane (1990a) consider those related to the preparation for college participation – high school progression and graduation, college preparatory programs, and achievement – as influential. Certain advanced high school courses in mathematics have been found to be "gatekeepers" for college application and attendance: Algebra I and Geometry are strongly correlated with enrollment to and graduation from college. They report that differences between minorities and non-minorities, and between economically disadvantaged and not, are minimized for the groups of students that take high school algebra and geometry. Other factors such as segregation, financial assistance and alternatives to college going (military, proprietary school, entering the labor market) did not prove as important in explaining the gap between white and minority college going rates (Pelavin and Kane, 1990a, 1990b).

"Closing the Gap": the project

In 1990, motivated by research findings showing that some high school classes were highly correlated and predictive of college attendance and completion, The College Board embarked on "Equity 2000", a major policy program, later renamed to "Closing the Gap". The College Board noted that within a system pursuing equity and excellence in education and exhibiting increasing postsecondary education participation, there has been an obvious and persistent gap in college attendance between minority and economically disadvantaged students and their non-minority and economically advantaged peers. The purpose of the program "is to close the gap in college-going and success rates between minority and non-minority, advantaged and disadvantaged students so that all students will be prepared to achieve success in their formal education and in their careers" (The College Board, 2001). The goal has been pursued through policy and curricular revisions in teaching and student support, particularly for students who are

traditionally considered "at risk" of educational failure. The reforms aim at changing course-taking patterns, mathematics achievement and college-going patterns (The American Institutes for Research [AIR], 1999), and consist primarily of curricular and policy interventions with early exposure to first-year algebra and geometry for all students as the main characteristic, as well more teacher and student support. More analytically, six components were developed to implement the program:

1. Creation of district-wide policy changes to end tracking and raise standards for all students beginning with the requirement that all students complete first-year algebra by the ninth grade and geometry by the tenth grade, and including reform of curriculum to reflect the standards set by the National Council of Teachers of Mathematics and other discipline-based organizations.
2. Establishment of ongoing professional development for teachers, counselors and principals to increase their knowledge and skills and to raise their expectations for students.
3. Improvements in school involvement with students' families to generate a consistent climate for learning and to empower parents to be advocates for their children's education.
4. Development of safety nets for students through academic enrichment programs that provide extra academic support.
5. Formulation of school-community partnerships including links with colleges and universities.
6. Use of student course enrollment and achievement data broken down by ethnic group and gender to monitor progress toward reform goals (after AIR, 1999).

Seven school districts across the US have been involved originally in the program: Fort Worth, Texas; Milwaukee, Wisconsin; Nashville, Tennessee; Prince George's County, Maryland; Providence, Rhode Island; East Side Union, California; and San Jose Unified, California.

It is worth noting that the percentage of minority students in all seven sites exceeds the national average of 31%. The proportion of white students decreased in all districts during the 1990s. The two California districts in particular, which are of interest to this study, exceed the national average in enrollments of both Hispanic and Asian

students. The other five districts exceed the national average in enrollment for African Americans (AIR, 1999).

The base year for implementing the program was either 1990-91 or 1991-92. The enrollment requirements in the 9th-grade Algebra I and 10th-grade Geometry, though, took effect in later academic years, different for each site. In San Jose Unified full implementation came in 1993-94, while for East Side Union in 1995-96. Therefore, the first cohorts for which all students went through the full program graduated in 1996-97 and 1998-99 respectively. The cohorts graduating one year before those, had partial experience of the program completing only the geometry requirement.

Research Questions

Specifically, this study, addresses the following research questions:

1. What are the trends in public college enrollment rates of racial/ethnic groups in California during the 1990s?
2. To what extent do school characteristics and race/ethnicity predict change in college-going rates? Can these relationships be modeled quantitatively based on data from California schools?
3. Has the "Closing the Gap" project been effective in decreasing the discrepancy in college going between racial groups?

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Methodology

Data sources and methods

The California Postsecondary Education Commission (CPEC) collects school and district level data for the class of entering freshmen from the public colleges and universities. CPEC provided the two main data sets with annual figures from 1990 to 1999 for all California public high schools. The first data set included the number of graduates from each high school broken down by gender and race. The second contained information on freshman college enrollments at high school level classified by racial group, and gender, in each of the three types of colleges: the University of California (UC) system, the California State Universities (CSU) and California Community Colleges (CCC).

Information of the race/ethnicity of an overall 3.88% of the freshmen over the 10 years was not available; they were coded as "no response". The non-responses were ignored from the analysis and therefore the percentages of enrollments are slightly underestimated. Two more categories were ignored: non-resident aliens, and those who answered "other" in the question on race/ethnicity (1.61% and 1.92% respectively).

The data sets from CPEC were useful for calculating the percent of high school graduates who enrolled in college annually for each school, by race, the primary variable of interest for this study. Various types of time series graphs were constructed showing the annual trends in enrollments for each racial group - Asians (including Filipinos), Blacks, Hispanics, Native Americans, and Whites - overall and for each type of public institution separately, both for all California schools and for the schools in the districts participating in the "Closing the Gap" study (CGS).

One type of graphs displayed how the percentage of high school graduates from each racial group who enrolled in colleges changed over the 10-year-period. Another showed the change in the percentage share of each racial group of freshman enrollments over the years. To look at more specific changes, various graphs plotted the change in the difference between pairs of racial groups. All of the above types of graphs were plotted both for all California schools and for the schools in the districts participating in the "Closing the Gap" project.

To build an explanatory model of college-going rates, additional variables on the school level were prepared: socioeconomic index, school size, school location, percent of

English Language Learners, and percent of Hispanics and Blacks, pupil-teacher ratio, percent of credentialed teachers in school, and average teacher experience. These variables were constructed from the data files "List of California Public School Districts and Schools", "Public School Enrollment and Staffing Data files", "Language Census", "CalWORKS Children/Meal Programs" available on the California Department of Education website (2001), collected through annual surveys. Together with an indicator representing "participation in the "Closing the Gap" project" all of the above variables were treated as independent variables and appear on Table 3. A choice had to be made regarding which year's data would be chosen for the predictor variables. Preliminary data analyses indicated that the majority of schools did not change rudimentary (0-25%, 25-50%, etc.) categories from 1994 to 1998 on the SES, minority and English learners variables. Considering that the implementation of the "Closing the Gap" program started after 1993, datasets from the middle of the 1993-1999 period, and specifically data from 1996-97 were eventually used when available. In some cases, year 1998-99 had the earliest available data sets.

For each racial group in each school there were 10 data points – 1 for each year – representing the percentage of high school graduates annual enrollment in college for each school's racial group. So for each school 4 "individual growth curves" (Rogosa and Saner, 1995) were available: one for each of the racial groups Asians, Hispanics, blacks, and whites. Only those curves that consisted of 10 points, i.e. groups in schools, which had data for all 10 years, were considered. All the percentages were transformed with the logit transformation $\log(\frac{percent}{1-percent})$. A straight line was fitted to each of these growth curves to reduce the data points from 10 to 2 (slope and intercept). The coefficients of the fitted lines were derived both with a simple linear regression fit and with a weighted (by the number of graduates) fit. Weighted estimates were subsequently used. The slopes-growths of the lines were then treated as the response variable regressed on independent predictors including the "CGS participation" variable.

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TABLE 3

Candidate variables for the explanatory model

Variable	Explanation	Variable levels
CGS participation	Participation in the "Closing the Gap" program	0: No 1: Yes
SES index	School percentage of students in the CALWorks program (96-97)	
Free/reduced lunch pct	School - percentage of students receiving free/reduced lunch (96-97)	
Minority pct (black)	Percentage of black students in school (96-97)	
Minority pct (Hispanic)	Percentage of Hispanic students in school (96-97)	
English Learners pct	Percentage of English language learners in school (96-97)	
Mean teacher experience at school	Mean experience of teachers in school in years (98-99)	
Fully credentialed teachers at school pct	Percentage of teachers in school who are fully credentialed (98-99)	
Pupil-teacher ratio	Pupil-teacher ratio (96-97)	
School size	High school enrollment size (96-97)	
Urbanicity (1)	School location	1: large city (>250000) 2: mid-size city (<250000) 3: urban friges of large cities 4: urban friges of mid-size cities 5: large town (>25000) 6: small town (2500-25000) 7: rural
Urbanicity (2)	School location, alternative categorization	1: 1, 2 from Urbanicity 1 2: 3, 4, 5 from Urbanicity1 3: 6, 7 from Urbanicity 1
Asian	Race/ethnicity dummy variable	1: if Asian, 0:otherwise
Black	Race/ethnicity dummy variable	1: if black, 0:otherwise
Hispanic	Race/ethnicity dummy variable	1: if Hispanic, 0:otherwise
Native American	Race/ethnicity dummy variable	1: if Nat.Am., 0:otherwise
White	Race/ethnicity dummy variable	1: if white, 0:otherwise
Growth	Slope of the individual growth curves for each ethnic group within each school (response variable).	

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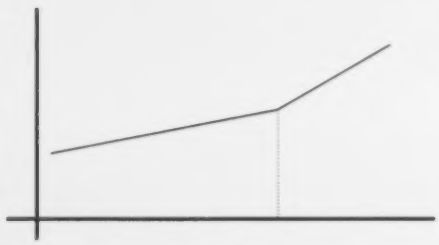
A more complicated piecewise linear regression model was tested, involving fitting a line with a break point at year 7, i.e. 1996-97 (Neter et al., 1996). Since the implementation was not uniform in the two districts, 1996-97 was regarded as the point where the growth of an ethnic group in one of the CGS schools would be expected to change had the program been effective. The model depicted in Figure 1 can be expressed as follows:

FIGURE 1
Piecewise linear regression fit



$$Y_i = \beta_0 + \beta_1 X_{i1} + \beta_2 (X_{i1} - 7) X_{i2} + \varepsilon_i$$

where: Y_i is the response vector, the transformed percent of graduates going to college of an ethnic group within a school,

X_{i1} is the vector of the year, taking the values 1 to 10,

X_{i2} is an indicator variable assuming the values 0 if $X_{i1} \leq 7$, or 1 otherwise,

β_0 is the intercept,

β_1 is the slope of the first piece of the fitted line,

β_2 is the slope added to β_1 to give the slope of the second piece of the fitted line,

ε_i are the error terms.

Then, growth after year 7, i.e. β_2 was modeled on selected predictors including the "CGS participation" variable to check whether the latter contributes to the prediction of growth after 1996-97.

Limitations of the study

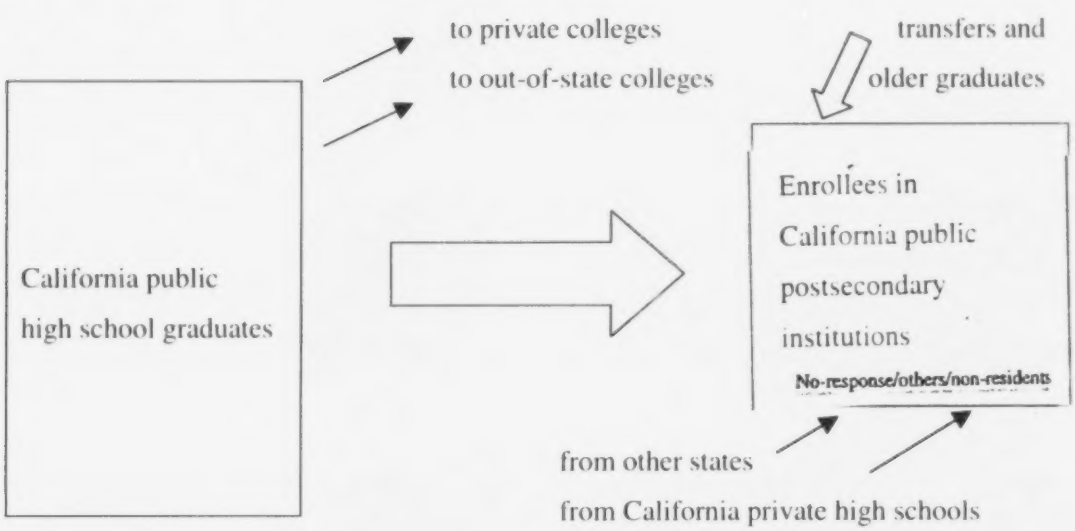
The design of a study predefines the type of conclusions that can be drawn from the results. This particular study is not a true experiment. The participating school districts were not chosen randomly; neither were any random assignments within districts made in order to create comparable experimental and control groups. Through randomization, the variables of interest could be manipulated, while the rest could be controlled for; thus the conclusions drawn could be attributed to the treatment. However, there are both practical and ethical considerations that forbid the implementation of such a design. Consequently, firm conclusions attributable to the program being evaluated cannot be

drawn. The project itself did not allow the alternative research design of matching districts on the basis of size, racial/ethnic composition and socioeconomic status either (AIR, 1999). High costs and effort did not allow for a quasi-experiment. However, an attempt was made to control for various demographic characteristics through statistical modeling.

The available data impose some limitations to the study as well because data collection relates only to public institutions. Although the vast majority of the relevant students are correctly captured by the data, some groups are inappropriately excluded or included. Thus the proportion of college-going high school graduates is delimited as follows: as can be seen in Figure 2, high school graduates who enrolled in private or out-of-state colleges are not included in the data, even though they are "college-goers". The numbers of enrollees included in the study (for whom race is known) are further reduced by the non-respondents in the race/ethnicity survey variables, and by students belonging to other smaller ethnic groups or are non-resident aliens. On the other side, college enrollments include graduates from private and from out-of-state high schools. Also, a large number of freshman enrollments come from transfers and older students.

FIGURE 2

Definition of freshman enrollees



A feature of the implementation of the "Closing the Gap" that makes the analysis difficult is that it took effect late in the 1990s, leaving only few post-implementation observations for evaluation purposes. In addition, the two districts had a two-year difference in the full implementation, as well as cohorts that participated partially in the program, thus moderating any effects by spreading them over this period. The 1996-97 academic year as the point defining the periods before and after the implementation was a judgmental choice. One district had fully implemented CGS by that year, while the other had partial implementation a year and full implementation two years later.

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Results

Enrollment Trends in California Public Institutions

The number of public high school graduates in California was less than a quarter of a million in 1990; by 1999 it was nearly 300000 (Table 4). Those who went on to enroll in California public higher education institutions followed a slight and steady increasing trend, too, after 1991. The percentage of graduates who enrolled in colleges fluctuated around 50% with a slight decline after 1996, a decline mainly in enrollments in Community Colleges.

TABLE 4

California high school graduates and college enrollees, 1990 to 1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number of graduates	236562	234164	244594	249320	253083	255200	259071	269071	281984	297414
Percent of graduates enrolled in colleges	52.2	52.3	50.5	50.3	49.8	52.4	52.8	51.2	49.8	47.4

As regards racial composition (Table 5), whites constitute the largest part of the high school graduate population. They followed a decreasing trend exhibiting a change of 9.6% from the beginning to the end of the decade, with a higher rate of decrease during in the first four years. In contrast, Hispanics, the second largest racial group kept increasing with a change of 8.7%. Asians were represented in the population with a fairly constant percentage of about 14.5%; their share increased by 0.9% during the whole period. Blacks kept a fairly constant percentage of about 7.5%. Native Americans were a very small group, less than 1% of the population. Results on their college going rates exhibited large variability; consequently the group was dropped from further analysis.

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TABLE 5

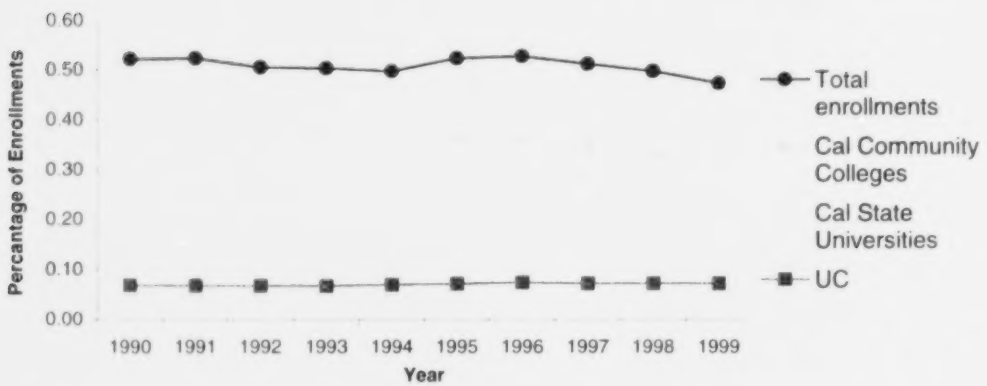
Racial composition of the California public high school graduate population 1990 to 1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Asians	13.9	14.1	14.3	14.7	15.2	14.5	14.4	14.7	15.1	14.8
Blacks	7.4	7.3	7.2	7.3	7.5	7.4	7.5	7.7	7.5	7.3
Hispanics	23.3	25.3	27.1	28.7	29.6	30.0	30.3	30.5	31.1	32.0
Nat. Amer.	0.8	0.9	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.9
Whites	54.6	52.5	50.6	48.4	46.9	47.2	46.8	46.3	45.5	45.0

What type of institutions did the graduates choose to attend? Figure 3 presents the percentages of graduates who enrolled in the various types of institutions. From approximately the half of those who did move to higher education, most of them attended Community Colleges. Originally 35% of all high school graduates enrolled in Community Colleges, but by the end of the nineties that percentage went down to 30%. The percentage of students going to California State Universities had a small decrease at the beginning of the decade but then rose to 10%. Students enrolling in the University of California system had a more stable 7% of the high school graduate population.

FIGURE 3

Percentage of California Public High School Graduates Enrolling in Each Segment of California Higher Education, Fall 1990 to Fall 1999

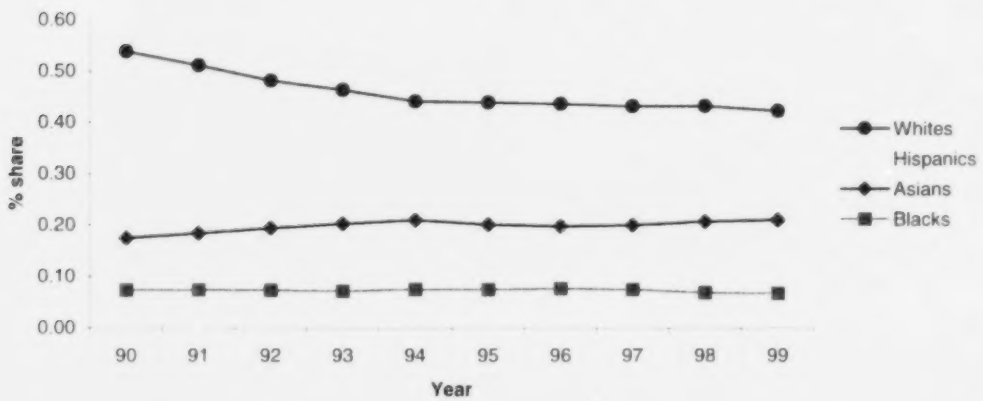


An alternative way to study enrollments is by looking at the proportion of students each racial group has in the population of enrollees. Figure 4 presents the change in the racial

composition of the annual enrollments. It should be noted however that this particular illustration is confounded with the composition of the overall student population; changes in the numbers of high school graduates racial groups are reflected in this graph, in addition to the changes in their enrollment trends, so this figure should be interpreted along with Table 5. As expected, the trend line for whites is decreasing, particularly in the first four years when a decrease in their graduate population is decreasing rapidly as well. By 1999 they constituted a 42% of the enrollees, a percentage lower than the 45% they occupied in the graduate population. More and more Hispanics enter postsecondary institutions, but just as whites they have about 3% less than their population share. In contrast, Asians apart from their obvious increase, their share of enrollments has been much higher than their representation in the student body – in 1999 the difference was about 6%. Finally, black enrollees where about as many in percent as black student percentage for most of the years; they showed a noticeable decline after 1997.

FIGURE 4

Racial groups' share in enrollments in postsecondary institutions, 1990 to 1999



The principal way to investigate racial change was to look at the percentage of a racial group's graduates who enrolled in colleges and universities (Figure 5). Asian graduates have had a clearly higher percentage of college enrollments compared to all other groups. Consistently more than 60% of those continued their education approaching 70% in 1995. The patterns of the enrollment percentages of blacks and whites were similar

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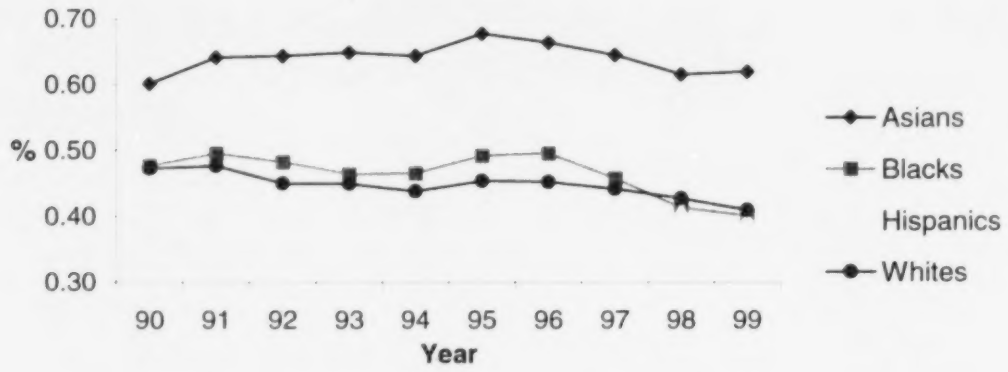
starting from nearly 50% in 1990 and declining to 40% in 1999. Hispanics percentages of enrollments were lower, fluctuating between 39 and 45%.

FIGURE 5

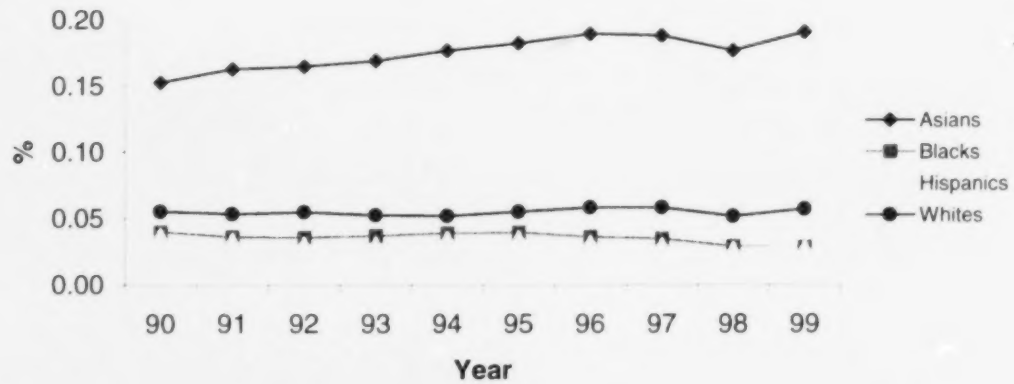
California percentage of enrollments to colleges from 1990 to 1999 by racial group



Study of the percentage of enrollments by type of institution reveals more interesting patterns. The percent of Asian graduates enrolling in the UC has been increasing up to 19% in 1999 (Figure 6). All the other groups have much lower enrollment percentages: Whites just below 6%, while Blacks and Hispanics have been slightly decreasing to 3%. The gap between majority and minority groups appears to increase.

FIGURE 6

California percentage of enrollments at UC from 1990 to 1999 by racial group



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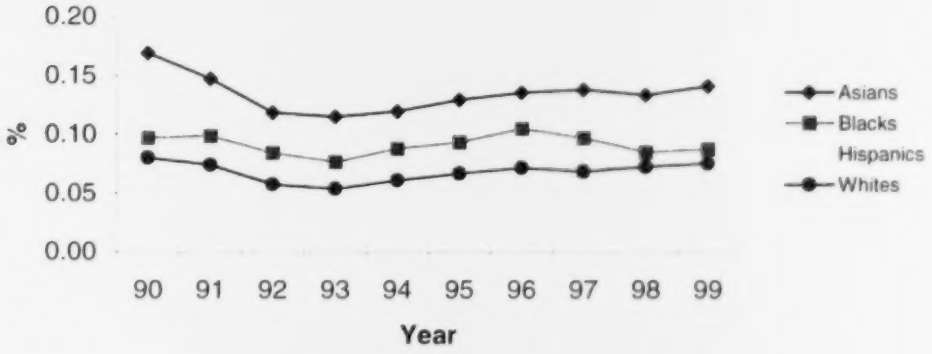
In Figure 7, the trends for CSU enrollments were similar for all groups: a decrease in the beginning of the 1990s, then an increase and a leveling off. In 1999 14% of Asians, 9% of Blacks, 7.5% of Whites and 7% of Hispanics high school graduates enrolled in State Universities.

FIGURE 7

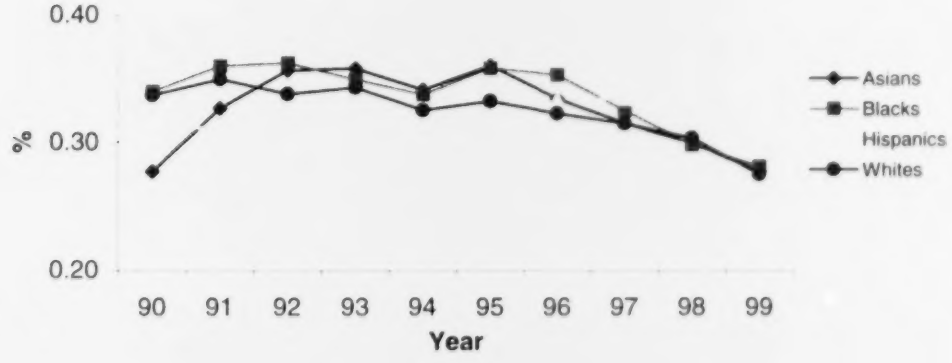
California percentage of enrollments at CSU from 1990 to 1999 by racial group



In CCC (Figure 8), the Asians do not hold the lead. Blacks and whites had the highest percentages in 1990. All groups rose their percentages by 1992 and, after a decline, again in 1995. A large decline was observed for all groups in the last half of the decade; in 1999 only about 30% of Hispanics and 28% of the other graduates enrolled in CCC.

FIGURE 8

California percentage of enrollments at CCC from 1990 to 1999 by racial group



Trends in the "Closing the Gap" districts

The same tables and figures presented in the previous section are constructed for the CGS schools. The high school graduates population fluctuated between 5000 and 6017 (Table 6). The annual percentages of students going to college are high compared to the corresponding figures for the state and indicate an increasing trend with the exception of a drop in 1999.

TABLE 6

CGS high school graduates and college enrollees, 1990 to 1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Total number of Graduates	5639	5251	5575	6017	5990	5852	5710	5442	5621	5964
Percentage of graduates enrolled to colleges	56.7	61.6	59.4	61.5	63.7	62.8	67.7	62.8	73.8	58.7

Unlike the racial composition of the state's high school graduates' population, in the CGS districts whites (Table 7), who were the largest group, declined to the third largest group in 1999 with a 27% representation. Asian graduates increased to become the most populous group (35.5%) followed by Hispanics (32%). Blacks' percentage fluctuated close to 5% and Native Americans to 1%. For the same reason as before, the latter group is dropped from further analysis because of small numbers; Native American high school graduates were less than 100 annually.

TABLE 7

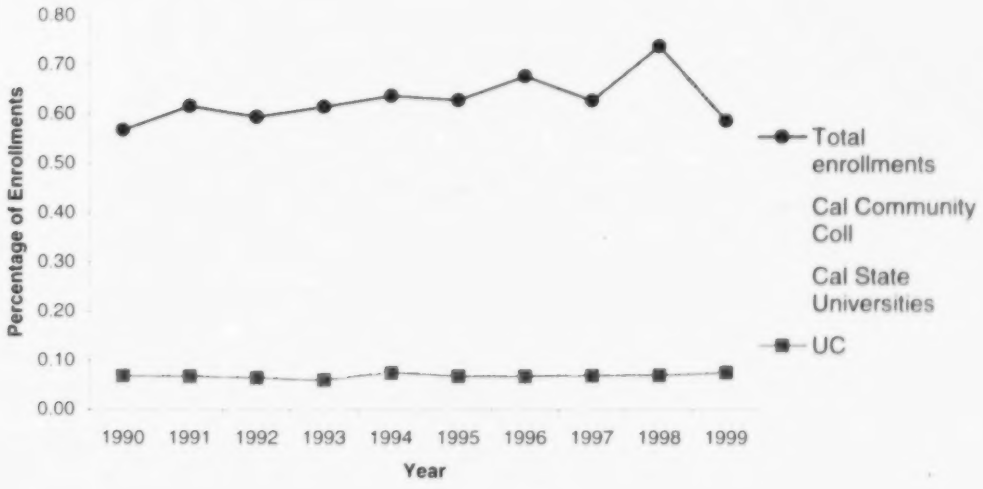
Racial composition of the CGS public high school graduate population, 1990 to 1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Asians	27.9	30.9	30.2	32.4	32.9	33.0	33.2	33.2	34.2	35.5
Blacks	6.4	5.8	4.7	6.3	5.4	6.3	5.6	5.5	5.5	5.0
Hispanics	25.8	25.7	29.1	29.1	31.4	31.7	33.0	33.4	32.1	31.8
Nat. Amer.	1.3	2.1	1.1	1.3	1.1	1.0	1.2	1.0	0.7	1.0
Whites	38.6	35.5	34.9	30.9	29.2	28.0	27.0	26.9	27.5	26.7

The higher college-going rate of the two districts, compared to the corresponding state college-going rate, can be seen in Figure 9 as well. The overall rate of enrollments has been well above 50%, where the California rate fluctuated. This difference is reflected in all three types of postsecondary institutions, particularly in CSU and CCC enrollments.

FIGURE 9

Percentage of CGS Public High School Graduates Enrolling in Each Segment of California Higher Education, Fall 1990 to Fall 1999



Following the decrease of the white high school graduates' percentage the whites' share in enrollments has been also decreasing (Figure 10). Most of the enrollees are Asians with annually increasing share well over their percentage in the graduates' population. The trend for Hispanics is also ascending, but their share in enrollments is not as high as their population share.

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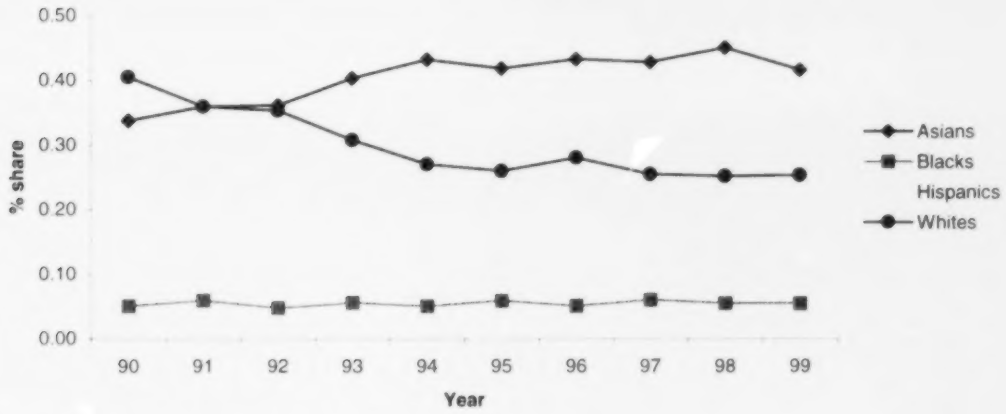
FIGURE 10

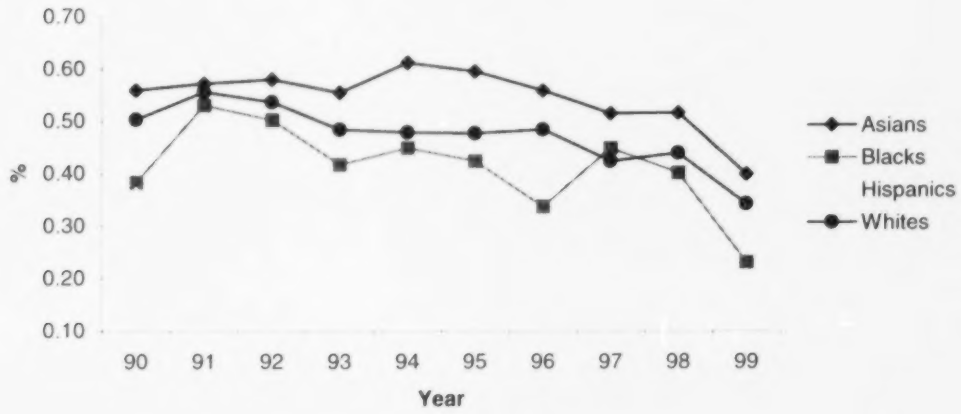
CGS racial groups' share in enrollments in postsecondary institutions, 1990 to 1999



As regards changes with respect to racial groups in the percentage of graduates going to college, the overall trends as well as trends specifically for each type of institution were similar to the state trends. They were less stable though, largely because of the smaller population size. In Figure 11, Asians exhibit the highest percentage trend of college-enrollees, which peaked in the mid-1990s. Hispanics have had the lowest rate of college-goers. Whites had in general higher percentages than blacks. The large drop in 1999 is due to the large drop in enrollments in CCC (see Figure 14 and related footnote).

FIGURE 11

CGS percentage of graduates enrolled in college from 1990 to 1999 by racial group



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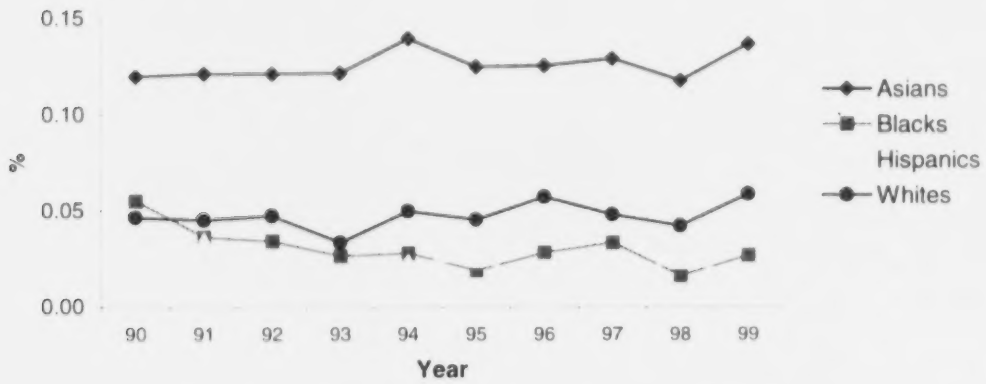
Broken down by type of institution, Asians' rate of enrollments in the UC system is clearly higher than those of the other groups (Figure 12). The rate for whites fluctuated around 5% during the 1990, while the blacks' and Hispanics' rates show a slight decline towards 2.5%.

FIGURE 12

CGS percentage of graduates enrolled in UC from 1990 to 1999 by racial group



During the early 1990s, all racial groups' rates of enrollments in CSU showed a decline and subsequently an increase (Figure 13). The patterns are very similar to the respective ones for the California population. Asians' rates have been higher in this case too. The differences between blacks, whites, and Hispanics in that order have been smaller.

FIGURE 13

CGS percentage of graduates enrolled in CSU from 1990 to 1999 by racial group

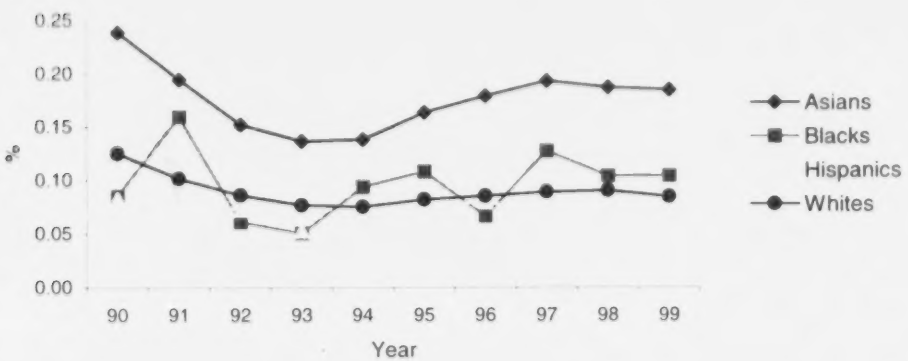


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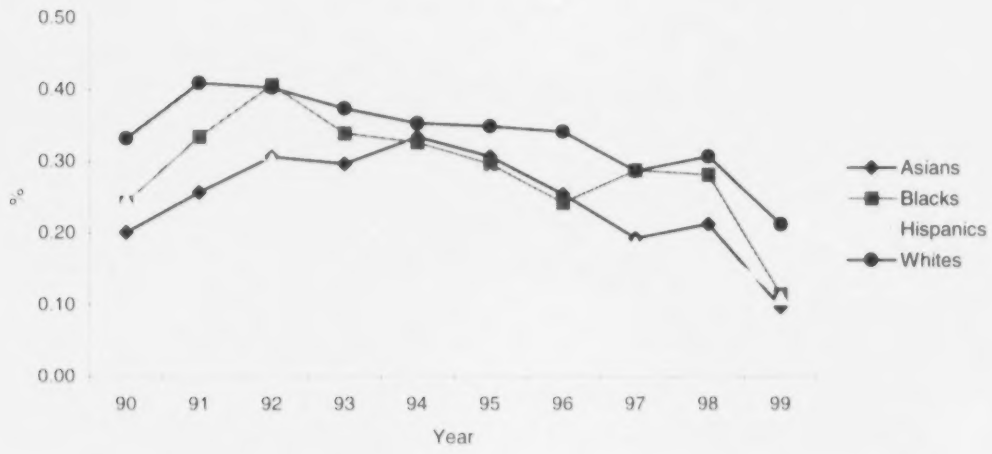
Figure 14 shows decreasing rates of enrollment in CCC for all racial groups. The numbers of students going to CCC are larger than in the other types of institutions. In 1999 all racial groups show a decrease in their enrollments[1]. The respective 1999 rates of enrollments in CCC for California approached 30% for all groups.

FIGURE 14

CGS percentage of graduates enrolled in CCC from 1990 to 1999 by ethnicity



Differences between racial groups

A different series of graphs was constructed taking two racial groups at a time and plotting the gap in their enrollment rates over time. Graphs were plotted for the following pairs of racial groups:

- Asians – blacks
- Asians – Hispanics
- Asians – whites
- whites – blacks
- whites – Hispanics
- blacks – Hispanics

For each pair four sets of plots were constructed: one for overall enrollment rates, and three for enrollments in each type of institution (UC, CSU, and CCC). In total there were

[1] One large high school was excluded when calculating the figures for 1999 because of obvious mistakes in the data: its college enrollees in CCC, were more than double its graduates. The CCC enrollment figures for this district were ignored (but not the numbers of graduates and enrollees in UC or CSU). This accounts partially for the large drop in Figures 14 and 11 for 1999.

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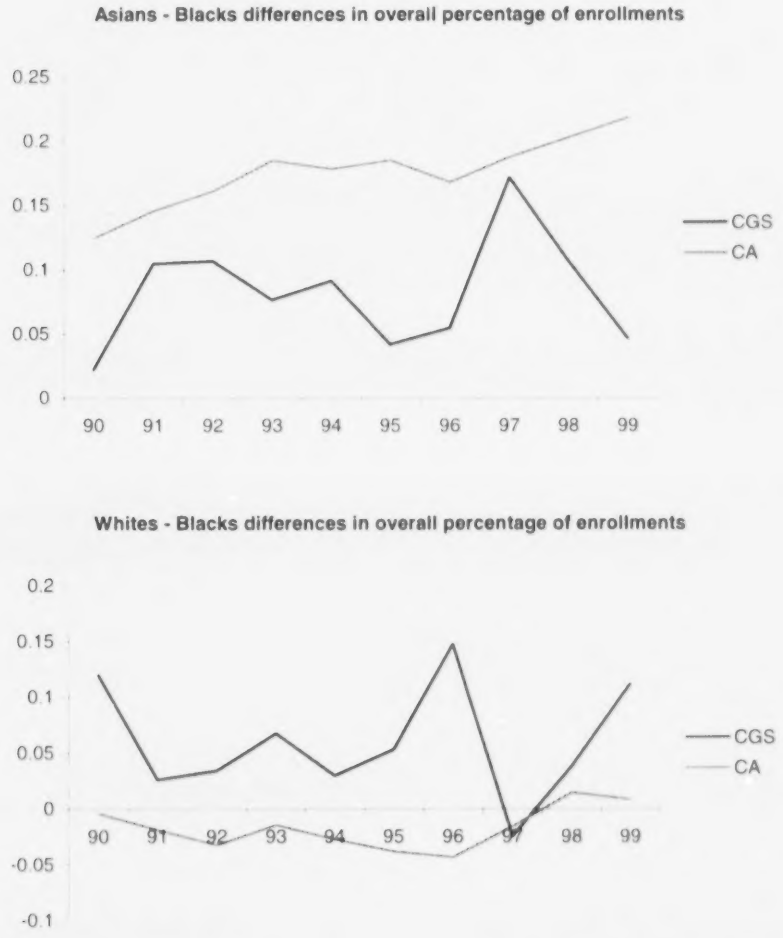
24 graphs (see Appendix I for all the graphs), each showing two trends: one from the California data and the other from the CGS districts data. Those referring to the majority, Asians and whites, compared to the minority, blacks and Hispanics are of most interest.

In the overall enrollments, the gap between Asians and Blacks has been increasing for the California districts, but has been more stable for the two CGS districts; the trends are similar for the white and blacks gap (Figure 15). The gap between Asians and Hispanics remained rather stable while the gap between Whites and Hispanics showed a decline in both the state as a whole and the two CGS districts (Appendix I). However these trends mask diverse patterns for different types of institutions.

FIGURE 15



The difference between majority and minority seemed to increase in the case of the UC percentage of enrollments both for California and for the CGS districts (refer to Appendix I for comparisons by type of institution). For CSU enrollments the gap seems to decrease, particularly in the CGS districts. The CSU gap trends for California districts were U-shaped. Whites' enrollment percentages are comparatively low, and often the gap went in favor of the minority groups. For CCC enrollments, the difference was originally in favor of the minority groups compared to Asians then moved in favor of Asians and in the end of the 1990s went close to zero. In the comparisons with whites the trends were rather horizontal in favor of whites in the CGS districts and much closer to zero in the all-California dataset.

Modeling for predicting growth in enrollments

Many of the predictor variables were highly correlated. To build a model for predicting the growth of the ethnicity curves, stepwise selection methods (with conservative "entry significance level" = 0.15, and "stay significance level" = 0.15) left the following candidate predictors in the model: Urbanicity (2)[2], Asian, Black, SES Index, Free/reduced lunch pct, Minority pct (black), Fully credentialed teachers at school pct, Minority pct (Hispanic), and Pupil-teacher ratio.

Then the growth variable was regressed on the selected predictor variables, without and with the "CGS participation" variable in the model with 2365 observations. The relevant SAS output in Appendix II shows that the proposed model with a very low $R^2 = 0.053$ does not do very well in predicting growth. However, the individual contribution of the "CGS participation" variable when added to the previous model is significant but with a negative coefficient sign ($\hat{\beta} = -0.09$, $p < 0.0001$).

To check whether this outcome is a statistical artifact resulting from the particular sample, the same process was followed, but the growth was estimated by fitting a line on the first 7 years of data up to 1996-97, i.e. before the program was implemented. Therefore, by adding it the "CGS participation" in the model its contribution in the model would not be expected to be significant. Using stepwise selection as before the growth variable was regressed on the selected variables without and with the "CGS participation"

[2] Urbanicity (1) gave very similar results as Urbanicity (2). The latter was used because it had fewer levels.

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variable. The selected variables were: Free/reduced lunch pct, White, Minority pct (black), and Pupil-teacher ratio; the number of observations used was 2451. Once more, the independent variables did a poor job in predicting growth $R^2 = 0.013$ (Appendix III). As before, the individual contribution of the "CGS participation" variable was significant and negative, even before the program was implemented ($\hat{\beta} = -0.06$, $p < 0.05$).

To get a clearer view of the contribution of the "CGS participation" variable in predicting growth after 1996-97 when the program was implemented, growth was modeled in piecewise linear regression models and for each ethnic group within a school, estimates of the two slopes (see Figure 1) were obtained. A separate stepwise model was built for each racial group in order to predict the second slope, the additional growth after the program was implemented. As before, the four models were not very successful in predicting growth, giving very low R^2 values. Then, selected predictors were used to predict the change in growth after the break point of 1996-97 without and with the "CGS participation" variable for each racial group separately. Table 8 shows that for none of the four racial groups was the partial contribution of the "CGS participation" variable significant. The estimates of the parameters of this variable were negative except for the case of blacks. Estimates for the rest of the variables and their standard errors can be found in Appendix IV output.

TABLE 8

Summary of the predictive model for the second parameter of the piecewise regression fits for each racial group

	Asian	Black	Hispanic	White
Other predictors in the model	Urbanicity (2)	Urbanicity (2) Mean teacher experience Pupil-teacher ratio	Urbanicity (2) Mean teacher experience School size	Urbanicity (2) Mean teacher experience Minority pct (black)
$\hat{\beta}$ for "CGS participation"	-0.329	0.021	-0.211	-0.149
t value	-0.98	0.06	-1.15	-1.12
p	0.33	0.95	0.25	0.26
No. observations	774	742	809	815
R^2	0.006	0.012	0.022	0.023

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Conclusions

In the last few years, there have been some important changes going on in California. The demographics of the state have been changing drastically, with the minority populations increasing rapidly. The population composition has been evidently reflected in the educational population, too. This fact is not without consequences to the educational process. The two districts participating in the "Closing the Gap" are examples of school districts were the Hispanics and Asians groups are growing very populous; there is no longer one majority group in these districts.

Moreover, there has been significant economic development during the 1990s in California, particularly, in the Bay Area and San Jose where the two districts are located. The rising economy with a promising environment for employment and career opportunities is a decisive factor, which can influence high school graduates to enter the workforce immediately after graduation, instead of continuing for a college degree.

The high school graduation trends during the 1990s reflected the student population growth and its changing composition. The numbers of graduates going to college also kept increasing, although in the last few years the percentage of college-goers showed a slight decline especially in Community Colleges. This maybe related to the attractiveness of the labor market, acting as a competitor to the least selective postsecondary institutions. Analysis of the trends showed that the gap in college-going rates between majority and minority racial groups is persistent, particularly in the more selective institutions of the UC system. It would be interesting to investigate whether the drop in the already low minority rates for UC from 1996 onwards is linked to the changes in admission policies for higher education. In CSU, rates for Asians remain higher than for the other groups. In CCC college-going rates appeared to decrease and converge for all groups by the end of the 1990s, showing that they are not as popular as in the past, possibly due to their sensitivity to the existing economic conditions offering attractive employment opportunities as an alternative to community college education.

In addition to demographic and economic factors, educational policies have recently "flourished". Apart from curriculum changes, the statewide accountability system is now in place and, since Proposition 209 in 1996, race and ethnicity are no longer considered in higher education admissions. Within all these changes and reforms

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it is undoubtedly difficult to evaluate the implications of an educational innovation such as the "Closing the Gap" with a non-experimental study. The results are also very difficult to interpret with all the above concurrent developments taking place. For example, a variety of school demographic variables were considered as possible predictors of the growth in percentage of enrollments during the 1990s. However, they did not provide a good predictive model, even when growth for each of the racial groups was considered separately. Does this mean that factors such as the mean experience of the teachers in the school, the percentage of students receiving financial help, or the percentage of English learners do not make any difference in the schools' college-going rates? It is not proper to support such a conclusion given the changes and reforms going on in the background of an observational study.

Although the population characteristics of the two "Closing the Gap" districts differed from the "average" California school population, their trends were not that different from the statewide trends. Asians held clearly higher college going-rates in the more selective institutions. Blacks seemed to have a small increase in CSU enrollments compared to the majority groups. Hispanics had typically had the lowest percentages of enrollments across all types of institutions. It is difficult to try to connect these trends to effects of the "Closing the Gap" given that it was fully implemented in the end of the decade. Minority trends did not seem to benefit over the majority groups after the program was in place in the late 1990s. However, the program affects all students in the participating schools and it may well have positive effects on both majority and minority groups or differential effects on some of them. Given the short period of time that it is in place, what is maybe required is more time before it produces any detectable results.

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APPENDIX I

Pairwise differences in enrollments

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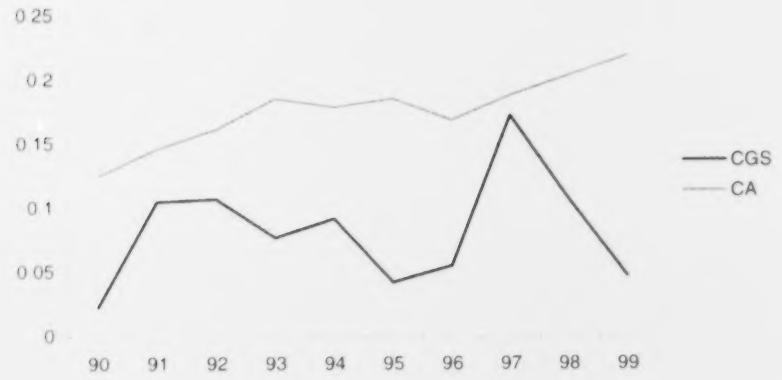
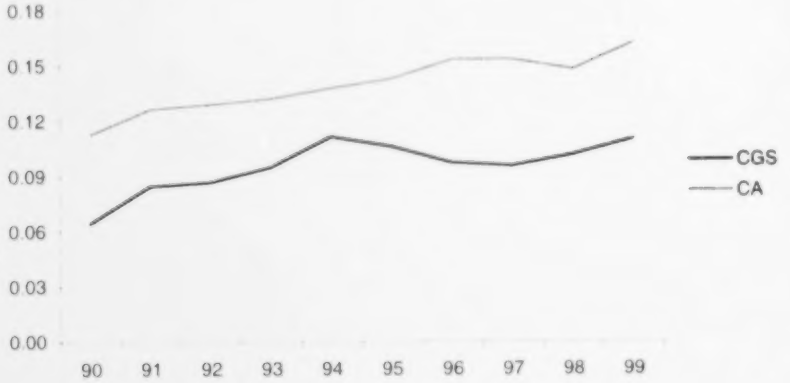
Asians – Blacks differences in percentage of enrollments

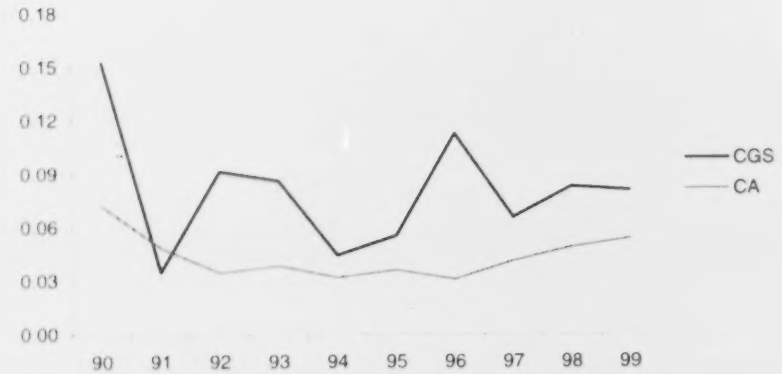
Asians - Blacks differences in overall percentage of enrollments



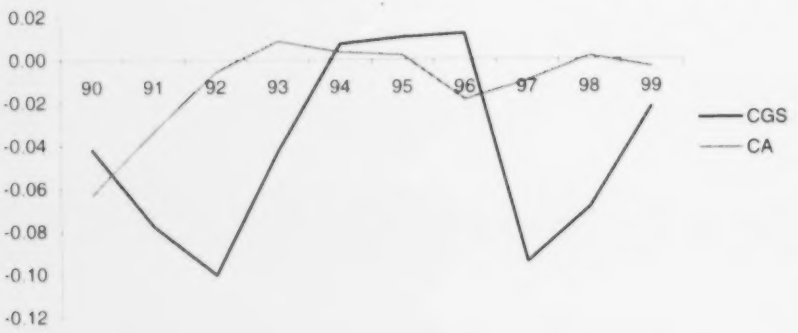
Asians - Blacks differences in percentage of enrollments in UC



Asians - Blacks differences in percentage of enrollments in CSU



Asians - Blacks differences in percentage of enrollments in CCC



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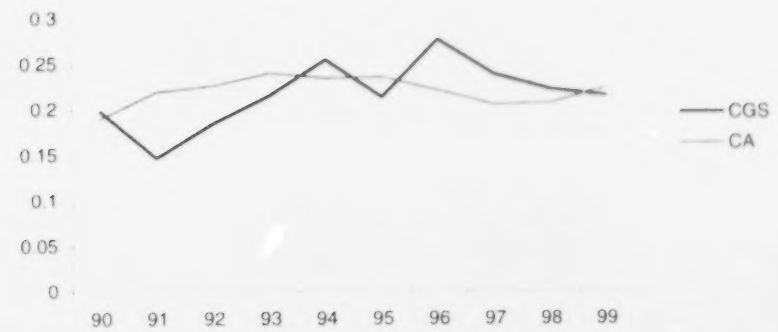
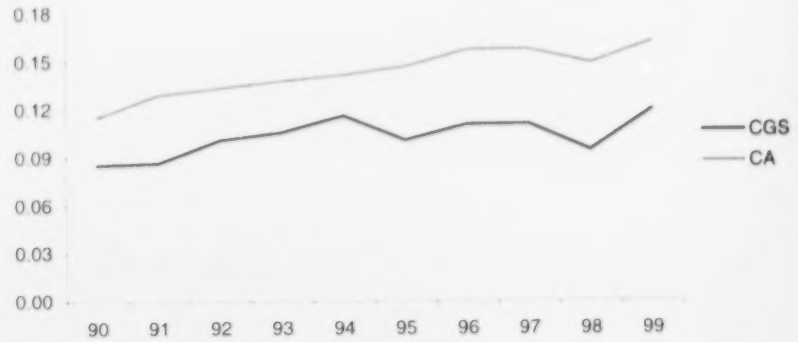
Asians – Hispanics differences in percentage of enrollments

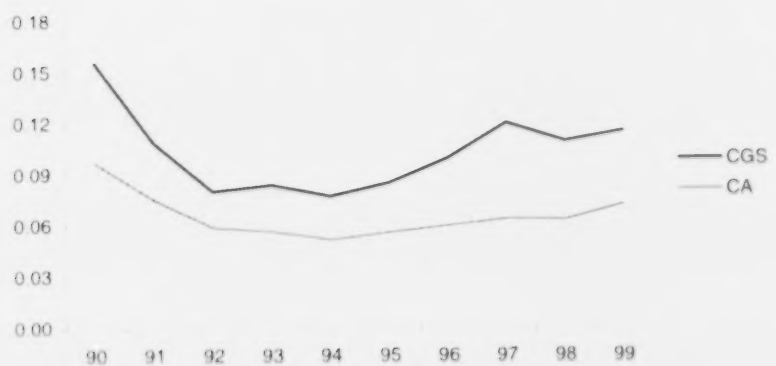
Asians - Hispanics differences in overall percentage of enrollments



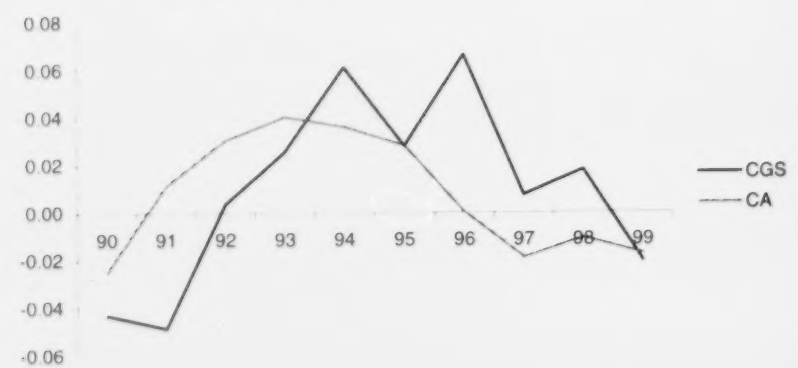
Asians - Hispanics differences in percentage of enrollments in UC



Asians - Hispanics differences in percentage of enrollments in CSU



Asians - Hispanics differences in percentage of enrollments in CCC



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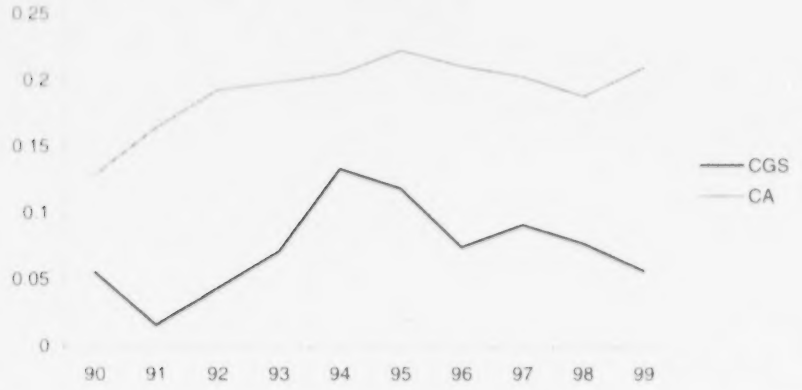
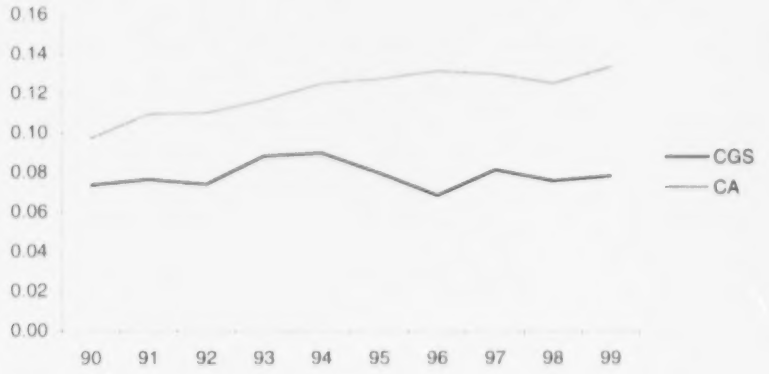
Asians – Whites differences in percentage of enrollments

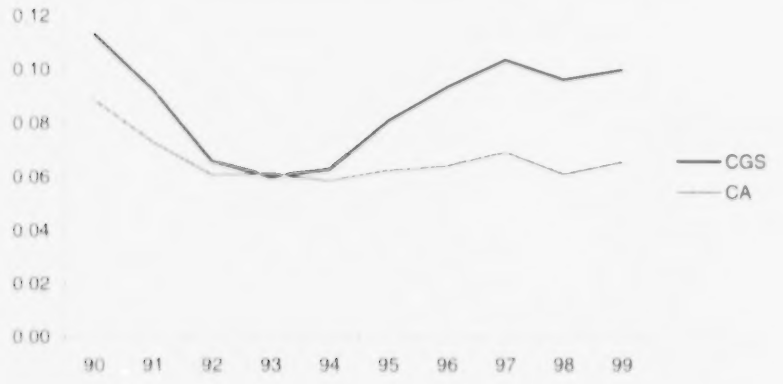
Asians - Whites differences in overall percentage of enrollments



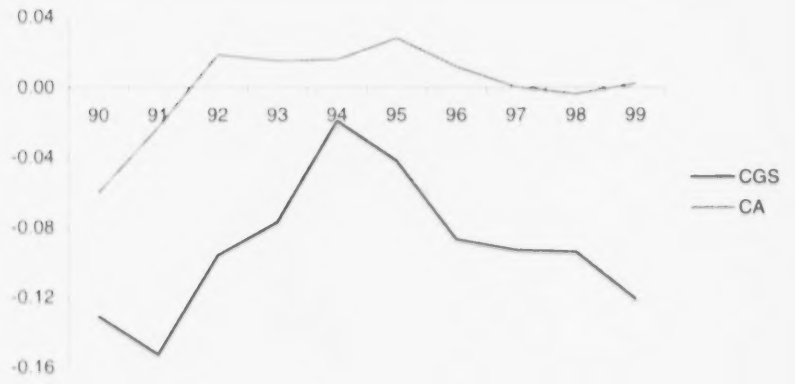
Asians - Whites differences in percentage of enrollments in UC



Asians - Whites differences in percentage of enrollments in CSU



Asians - Whites differences in percentage of enrollments in CCC



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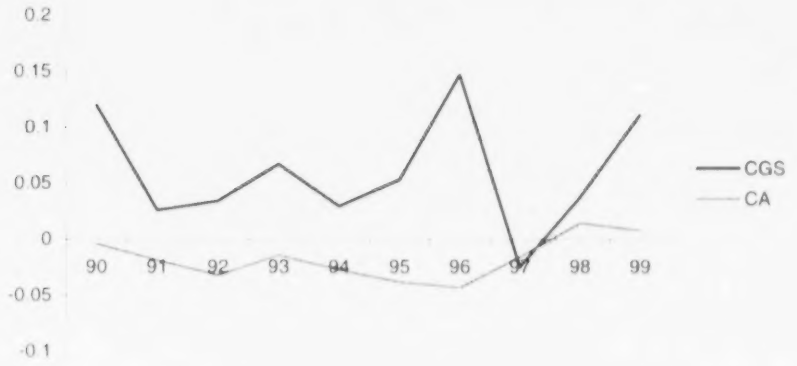
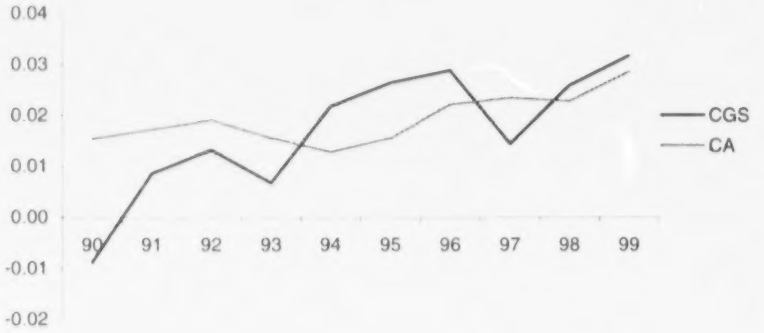
Whites – Blacks differences in percentage of enrollments

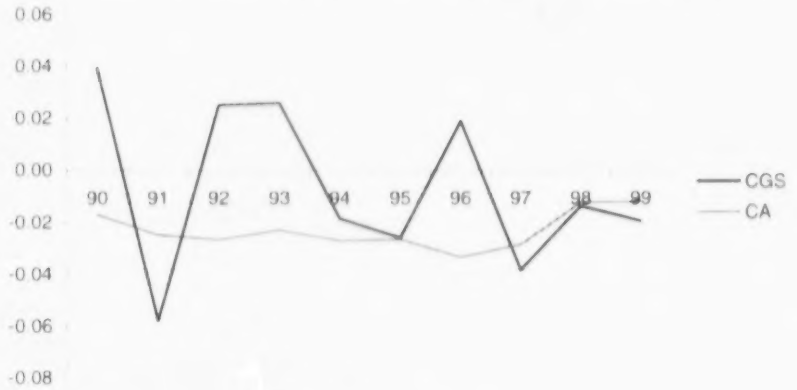
Whites - Blacks differences in overall percentage of enrollments



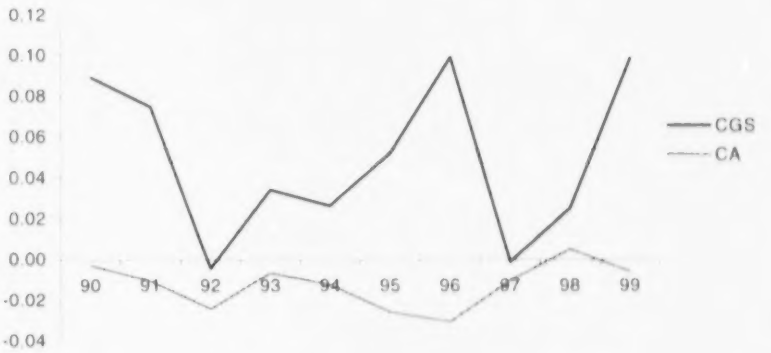
Whites - Blacks differences in percentage of enrollments in UC



Whites - Blacks differences in percentage of enrollments in CSU



Whites - Blacks differences in percentage of enrollments in CCC



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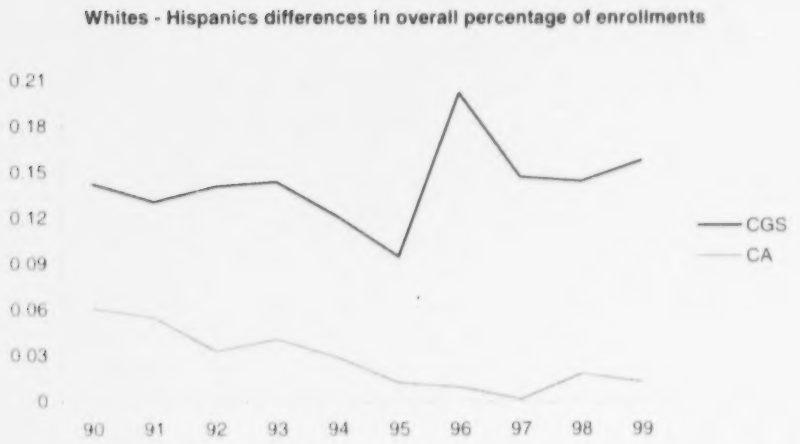
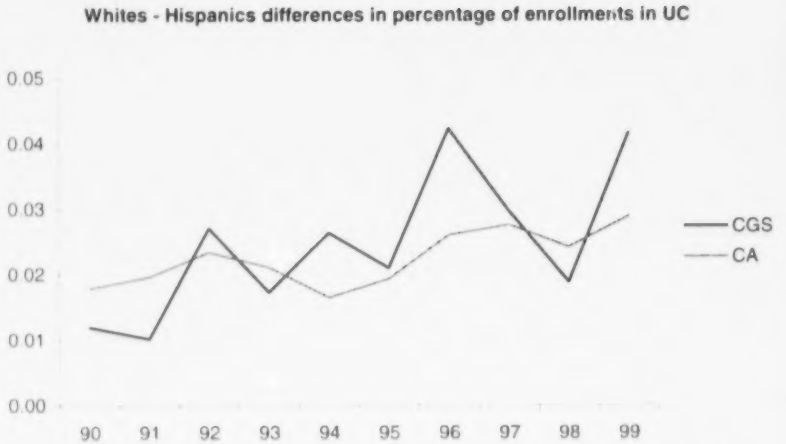
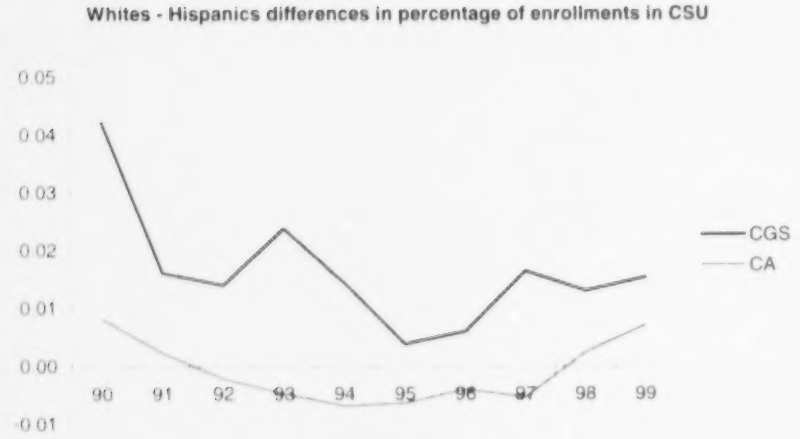
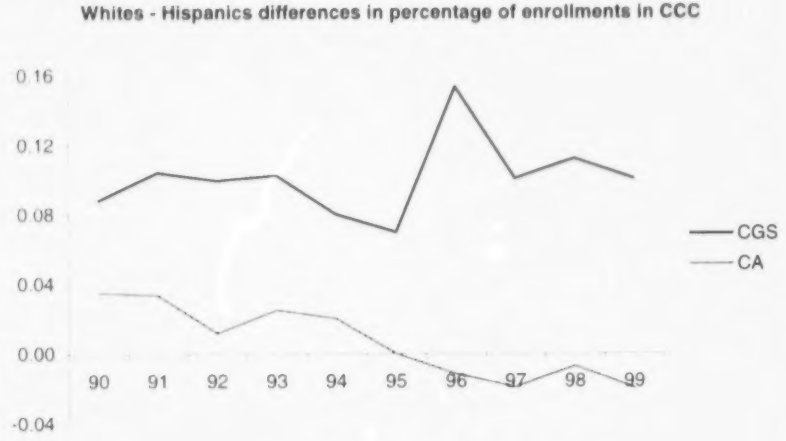
Whites – Hispanics differences in percentage of enrollments









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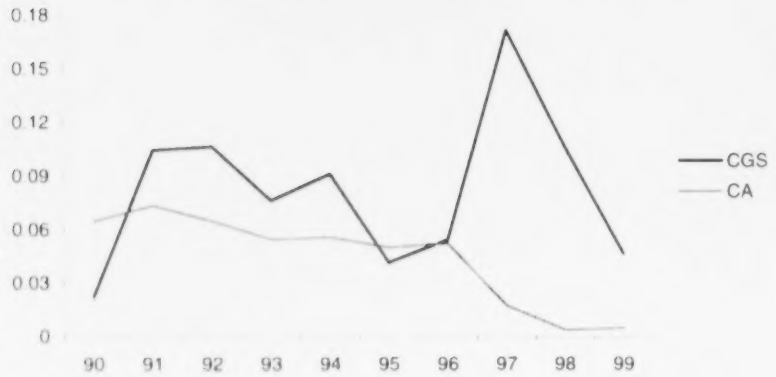
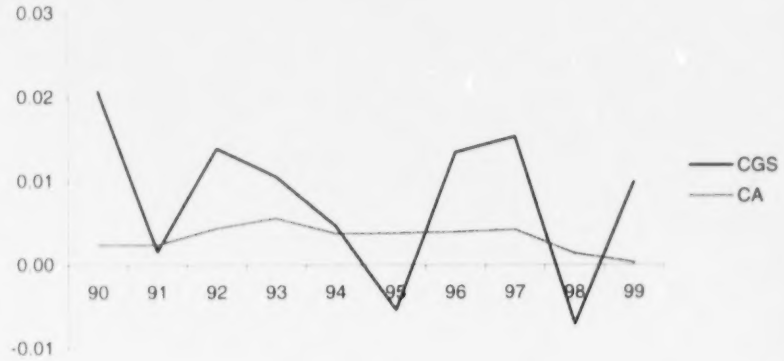
Blacks – Hispanics differences in percentage of enrollments

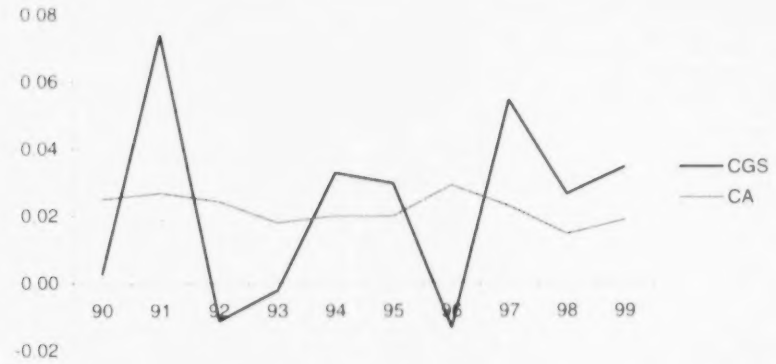
Blacks - Hispanics differences in overall percentage of enrollments



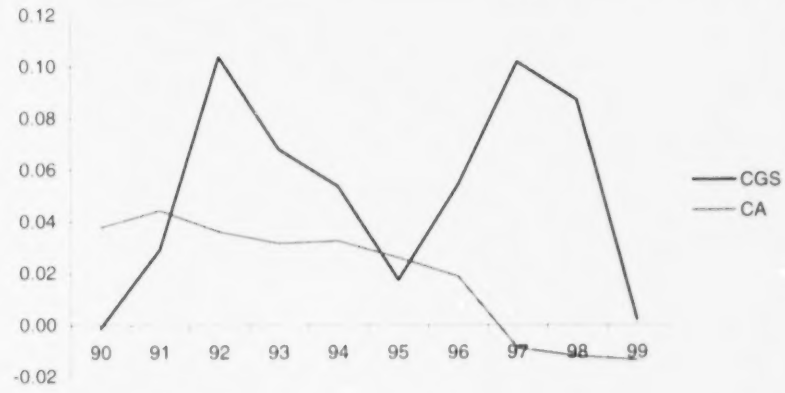
Blacks - Hispanics differences in percentage of enrollments in UC



Blacks - Hispanics differences in percentage of enrollments in CSU



Blacks - Hispanics differences in percentage of enrollments in CCC



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APPENDIX II

SAS output comparing models predicting growth (over all 10 years of data)
(a) without and (b) with participation in the "Closing the Gap"

(A) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	10	2.16648	0.21665	10.99	<.0001
Error	2354	46.40840	0.01971		
Corrected Total	2364	48.57488			

Root MSE	0.14041	R-Square	0.0446
Dependent Mean	-0.01877	Adj R-Sq	0.0405
Coeff Var	-747.93436		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.08819	0.05230	-1.69	0.0919
urban1	1	-0.03158	0.01358	-2.33	0.0201
subur1	1	-0.03901	0.01273	-3.06	0.0022
As	1	0.02452	0.00715	3.43	0.0006
Bl	1	-0.02248	0.00807	-2.79	0.0054
AFDC_PCT	1	-0.00069625	0.00035163	-1.98	0.0478
FREE_PCT	1	0.00094280	0.00024775	3.81	0.0001
black_pc	1	0.06161	0.03487	1.77	0.0774
FULL_PCT	1	0.00120	0.00046471	2.58	0.0100
hisp_pc	1	0.06208	0.01854	3.35	0.0008
pt_ratio	1	-0.00198	0.00111	-1.79	0.0744

(B) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	11	2.57825	0.23439	11.99	<.0001
Error	2353	45.99663	0.01955		
Corrected Total	2364	48.57488			

Root MSE	0.13981	R-Square	0.0531
Dependent Mean	-0.01877	Adj R-Sq	0.0487
Coeff Var	-744.76710		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.04421	0.05295	-0.83	0.4039
urban1	1	-0.02505	0.01359	-1.84	0.0655
subur1	1	-0.04021	0.01268	-3.17	0.0015
As	1	0.02446	0.00712	3.43	0.0006
Bl	1	-0.02215	0.00804	-2.76	0.0059
AFDC_PCT	1	-0.00053191	0.00035197	-1.51	0.1309
FREE_PCT	1	0.00073728	0.00025073	2.94	0.0033
black_pc	1	0.03741	0.03512	1.07	0.2868
FULL_PCT	1	0.00076151	0.00047239	1.61	0.1071
hisp_pc	1	0.06561	0.01848	3.55	0.0004
pt_ratio	1	-0.00197	0.00110	-1.79	0.0743
Cl_Gap	1	-0.08982	0.01957	-4.59	<.0001

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APPENDIX III

SAS output comparing models predicting growth (over the 7 first years only)
(A) without and (B) with participation in the "Closing the Gap"

(A) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	1.50450	0.37613	6.80	<.0001
Error	2446	135.29500	0.05531		
Corrected Total	2450	136.79950			

Root MSE	0.23519	R-Square	0.0110
Dependent Mean	0.01546	Adj R-Sq	0.0094
Coeff Var	1521.68630		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.07884	0.04165	1.89	0.0585
FREE_PCT	1	0.00097512	0.00024779	3.94	<.0001
wh	1	-0.03324	0.01067	-3.11	0.0019
black_pc	1	-0.08817	0.04575	-1.93	0.0541
pt_ratio	1	-0.00306	0.00166	-1.84	0.0656

(B) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	1.72818	0.34564	6.26	<.0001
Error	2445	135.07132	0.05524		
Corrected Total	2450	136.79950			

Root MSE	0.23504	R-Square	0.0126
Dependent Mean	0.01546	Adj R-Sq	0.0106
Coeff Var	1520.73880		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.07475	0.04167	1.79	0.0730
FREE_PCT	1	0.00094154	0.00024820	3.79	0.0002
wh	1	-0.03345	0.01067	-3.14	0.0017
black_pc	1	-0.09057	0.04574	-1.98	0.0478
pt_ratio	1	-0.00278	0.00167	-1.67	0.0953
CI_Gap	**1**	**-0.06075**	**0.03019**	**-2.01**	**0.0443**

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APPENDIX IV

SAS output comparing models predicting growth after the implementation of CGS in 1996-97 (A) without and (B) with participation in the "Closing the Gap" by racial group

ASIAN

(A) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	6.02766	3.01383	1.88	0.1526
Error	771	1233.06920	1.59931		
Corrected Total	773	1239.09686			

Root MSE	1.26464	R-Square	0.0049
Dependent Mean	-0.03988	Adj R-Sq	0.0023
Coeff Var	-3170.83675		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.20425	0.13798	1.48	0.1392
subur1	1	-0.29209	0.15050	-1.94	0.0526
urban1	1	-0.24113	0.15973	-1.51	0.1316

(B) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	7.55678	2.51893	1.57	0.1940
Error	770	1231.54008	1.59940		
Corrected Total	773	1239.09686			

Root MSE	1.26467	R-Square	0.0061
Dependent Mean	-0.03988	Adj R-Sq	0.0022
Coeff Var	-3170.92711		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	0.20425	0.13799	1.48	0.1392
subur1	1	-0.29209	0.15050	-1.94	0.0526
urban1	1	-0.22112	0.16104	-1.37	0.1701
Cl_Gap	1	-0.32944	0.33693	-0.98	0.3285

BLACK

(A) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	16.27243	5.42414	3.02	0.0290
Error	738	1324.18127	1.79428		
Corrected Total	741	1340.45370			

Root MSE	1.33951	R-Square	0.0121
Dependent Mean	-0.12866	Adj R-Sq	0.0081
Coeff Var	-1041.15438		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.05745	0.48040	-0.12	0.9048
urban1	1	-0.19968	0.10571	-1.89	0.0593
YRS_TEACH	1	0.03145	0.01776	1.77	0.0770
pt_ratio	1	-0.01919	0.01659	-1.16	0.2478

(B) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	16.27869	4.06967	2.27	0.0607
Error	737	1324.17501	1.79671		
Corrected Total	741	1340.45370			

Root MSE	1.34041	R-Square	0.0121
Dependent Mean	-0.12866	Adj R-Sq	0.0068
Coeff Var	-1041.85802		

Parameter Estimates

variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.05623	0.48117	-0.12	0.9070
urban1	1	-0.20095	0.10794	-1.86	0.0630
YRS_TEACH	1	0.03141	0.01779	1.77	0.0779
pt_ratio	1	-0.01921	0.01661	-1.16	0.2477
Cl_Gap	1	0.02110	0.35755	0.06	0.9530

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HISPANIC

(A) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	7.94559	2.64853	5.48	0.0010
Error	805	389.07571	0.48332		
Corrected Total	808	397.02130			

Root MSE	0.69521	R-Square	0.0200
Dependent Mean	-0.11299	Adj R-Sq	0.0164
Coeff Var	-615.27202		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.12883	0.13395	-0.96	0.3365
suburl	1	-0.15154	0.04933	-3.07	0.0022
YRS_TEACH	1	0.01385	0.00854	1.62	0.1051
hs_enr	1	-0.00024497	0.00011017	-2.22	0.0264

(B) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	8.58184	2.14546	4.44	0.0015
Error	804	388.43946	0.48313		
Corrected Total	808	397.02130			

Root MSE	0.69508	R-Square	0.0216
Dependent Mean	-0.11299	Adj R-Sq	0.0167
Coeff Var	-615.15095		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.12603	0.13395	-0.94	0.3470
suburl	1	-0.16058	0.04994	-3.22	0.0014
YRS_TEACH	1	0.01425	0.00854	1.67	0.0958
hs_enr	1	-0.00024393	0.00011015	-2.21	0.0271
Cl_Gap	1	-0.21069	0.18359	-1.15	0.2515

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WHITE

(A) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	4.49766	1.49922	5.96	0.0005
Error	811	203.98493	0.25152		
Corrected Total	814	208.48259			

Root MSE	0.50152	R-Square	0.0216
Dependent Mean	-0.03734	Adj R-Sq	0.0180
Coeff Var	-1342.98713		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.26775	0.09400	-2.85	0.0045
subur1	1	0.06691	0.03575	1.87	0.0617
YRS_TEACH	1	0.01022	0.00596	1.71	0.0868
black_pc	1	0.62331	0.16440	3.79	0.0002

(B) Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	4.81536	1.20384	4.79	0.0008
Error	810	203.66723	0.25144		
Corrected Total	814	208.48259			

Root MSE	0.50144	R-Square	0.0231
Dependent Mean	-0.03734	Adj R-Sq	0.0183
Coeff Var	-1342.76901		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-0.26409	0.09404	-2.81	0.0051
subur1	1	0.06043	0.03621	1.67	0.0955
YRS_TEACH	1	0.01044	0.00596	1.75	0.0803
black_pc	1	0.61546	0.16452	3.74	0.0002
Cl_Gap	1	-0.14892	0.13249	-1.12	0.2613

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